United States Environmental Protection Agency

Environmental Technology Verification Program

April 2002

QUARTERLY REPORT

ETV Advanced Monitoring Systems Center to Conduct Phase 2 Mercury CEMs Testing

Most U.S. Department of Energy (DOE) sites depend on incineration and other forms of thermal treatment to treat a wide variety of mixed wastes. Increasingly strict regulatory standards and growing public concerns are causing operators of mixed waste treatment facilities to control air emissions to unprecedented low levels, and to provide assurance through monitoring that emissions controls are working.

Monitoring methods, such as use of continuous emissions monitors (CEMs), for mercury vapors are necessary to ensure that mercury, a toxic metal often present in the mixed waste contained at DOE sites, is not being released. While the use of mercury CEMs will not directly control whether emissions are released, it will:

- Verify emissions compliance;
- Provide data to optimize emissions control;
- Provide evidence that demonstrates the degree of emission controls achieved;
- Satisfy regulatory requirements; and
- Increase public confidence in the safety and technical credibility of the incineration process.

The ETV Advanced Monitoring Systems Center recently completed phase 1 verification testing of four mercury CEMs at the Rotary Kiln Incinerator Simulator within EPA's Incineration Research Laboratory in Research Triangle Park, North Carolina. Currently, the ETV Advanced Monitoring Systems Center is collaborating with DOE to conduct field demonstration testing of several mercury CEMs. This testing is scheduled to take place at the Toxic Substances Control Act (TSCA) Incinerator, a mixed-waste incinerator, at the East Tennessee Technology Park in Oak Ridge, TN.

According to the test plan developed by Battelle, a Center verification partner, the primary objective of the field demonstration testing is to compare the performance of mercury CEMs in a full-scale field environment so that the results can be used to select monitors for use at DOE facilities. A secondary objective is to support EPA, industry, CEM vendors, and the public in gathering information that will be useful in assessing the performance of mercury CEMs as the debate continues on the regulatory implementation of mercury CEMs for compliance monitoring.

Three vendors with four technologies have confirmed that they will be participating in the phase 2 testing: PS Analytical, Nippon Instruments Corporation (with 2 technologies), and Opsis AB. Several other vendors have expressed interest in participating and are expected to sign on before testing begins. Vendors will oversee installation of the CEMs and will train technical support staff in the routine operation and maintenance of the monitors. The vendors also will be present during the initial and final weeks of testing to ensure optimal operation of the monitors for comparison with reference samples and calibration gas standards. Otherwise, an incinerator staff technician will be responsible for routine daily operation and maintenance of the monitors, as well as data logging. The field demonstration, which will be conducted in accordance with the TSCA Incinerator burn schedule, is expected to begin in late May and will last for up to three months. For additional information on the ETV Advanced Monitoring Systems Center's mercury CEM testing, contact Tom Kelly at 614-424-3495 or kellyt@battelle.org

ETV Water Quality Protection Center Addresses Runoff Technologies

Interest in storm water and other human-generated runoff into our nation's receiving waters has dramatically increased in the past few years. As a result, there has been a strong push for the application of new technologies for removing various contaminants from runoff, particularly in urban areas. The compliance deadline for EPA's National Pollutant Discharge Elimination System (NPDES) Phase II Storm Water Rule is rapidly approaching; it will take effect on March 10, 2003. As a result, states, municipalities, and surface water planners are struggling to determine what measures will meet the rule's Best Management Practices

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What's Inside

Center Stage

ETV Advanced Monitoring Systems Center

Advanced Monitoring Systems

- Solicited vendors of technologies that detect ammonia "slip" emissions, and held an EPA Region 1 meeting on January 30 in Boston, MA, to plan this verification test.
- Solicited vendors of multi-parameter water probes for testing this spring in Charleston, SC.
- Solicited vendors for Phase 2 testing of mercury continuous emissions monitors.
- Completed verification testing of an on-board vehicle emission monitor.
- Completed verification testing of an x-ray based continuous emissions monitor for metals, in collaboration with the U.S. Army's Construction Engineering Research Laboratory at its demilitarization incinerator at the Tooele Army Depot, UT.
- Held an air stakeholder group meeting on April 25-26 in Pine Mountain, GA.

Site Characterization and Monitoring Technologies

- Tested five lead-in-dust technologies in November, one in January, and finalized the test plan for evaluation of field portable measurement technologies for lead-in-dust wipes in January.
- Began verification testing of dissolved hydrogen sensors for application in monitored natural attenuation.

ETV Air Pollution Control Technology Center

- Held volatile organic compounds technical panel meetings on November 27 and March 9.
- Completed testing of seven dust suppression and soil stabilization products in January. Held vendor meetings on March 20 at Maricopa County, AZ and April 3 at Fort Leonard Wood, MO.
- Completed round three verification testing of two baghouse filtration products.
- Formed two new technical panels related to mobile diesel engines: the mobile sources selective catalytic reduction (SCR) technical panel and the mobile sources fuels technical panel.
- Held the first two meetings of the mobile sources SCR technical panel on February 28 and April 8 in Arlington, VA. Held the first two meetings of the mobile sources fuels technical panel on February 27 and April 9 in Arlington, VA.
- Completed the generic verification protocol for diesel exhaust catalysts, particulate filters, and engine modification control technologies for highway and nonroad use diesel engines in February.
- Held a stakeholder group meeting on March 13 in Research Triangle Park, NC.
- Presented at the 26th Annual Information Exchange in December and at the Institute of Clean Air Companies Forum '02: Cutting NOx in February.

ETV Greenhouse Gas Technology Center

- Held a vendor meeting with COMM Engineering in October.
- Held a vendor meeting with Engineered Concepts, LLC in February.
- Completed the generic verification protocol for natural gas-fired microturbine electrical generators in March.

ETV Drinking Water Systems Center

- Completed verification testing of two ultraviolet (UV) radiation systems developed by Trojan Technologies and Atlantic UV.
- Held a conference call of the stakeholder group's steering committee on January 17.
- Presented at the American Water Works Association's Inorganic Contaminants Workshop from February 3-6 in San Diego, CA.
- Presented at the Association of State Drinking Water Administrators' Advanced Technologies Conference from April 30-May 1 in Atlanta, GA.

ETV Water Quality Protection Center

Source Water Protection Technologies

- Added a new technology category for testing: UV disinfection technologies for secondary effluent and wastewater reuse. Testing is scheduled to begin this spring.
- Held a meeting of the decentralized wastewater treatment technologies stakeholder group on March 20 in Newport, RI.
- Completed verification testing of a mercury amalgam separation technology.

Wet Weather Flow Technologies

- Held a stormwater treatment technology panel meeting on November 13 in Salt Lake City, UT.
- Held a stakeholder group meeting on November 14 in Salt Lake City, UT.
- Began verification testing of a high-rate solids separation technology in December at a combined sewer overflow treatment unit in Louisville, KY.
- Completed the test plan for testing high-rate UV disinfection technologies at a wastewater treatment plant in Parsippany-Troy Hills, NJ.
- Completed verification testing of two chemical induction mixers.
- Began verification testing of a wet weather flow computer model.

ETV Pollution Prevention, Recycling, and Waste Treatment Systems Center

P2 Innovative Coatings and Coating Equipment

- Held a stakeholder group meeting on October 18 in conjunction with the Coating 2001 Conference and Exhibition in Orlando, FL.
- Presented at the 12th Annual Workshop on Solvent Substitution from December 10-13 in Scottsdale, AZ.

P2 Metal Finishing Technologies

- Held a stakeholder group meeting in conjunction with the American Electroplaters and Surface Finishers Society/EPA Conference for Environmental Excellence on January 28 in Orlando, FL.
- Completed the generic verification protocol for aqueous cleaner recycling technologies.
- Completed verification testing of an electrocoagulation treatment technology.
- Completed verification testing of an automated tank cover/exhaust reduction system for energy conservation.
- Completed verification testing of a high efficiency ion exchange technology.

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(BMPs) requirement. In many applications, the use of proprietary technologies such as separators and filtration devices will be needed. However, a wide variety of technologies is emerging, and a reasonable and uniform method of verifying the performance of the technologies is necessary. ETV's Water Quality Protection Center provides this method.

NSF International, the Center verification partner, is developing test protocols for various types of technologies that address wet weather flow and source water protection issues. The Center will test technologies in the field and in the laboratory, depending on the technologies' applications. Two original ETV pilots combined to comprise the Water Quality Protection Center: the Source

Water Protection Technologies Pilot and the Wet Weather Flow Pilot, which both started in 1998. NSF International was the verification partner for these two pilots and is currently the verification partner for the Water Quality Protection Center. The source water protection area developed three stakeholder groups to address a variety of technologies in the categories of decentralized wastewater treatment, infrastructure and watershed protection, and ballast water treatment. Technology panels under the decentralized wastewater treatment technologies group developed protocols for residential nutrient reduction technologies and wastewater treatment technologies (the wastewater treatment protocol addresses applications such as schools, small communities, restaurants, and light industry). The infrastructure and watershed protection stakeholder group named several technologies as priorities, including coatings and grouts for sewer system rehabilitation, pipe bursting technologies, mercury amalgam removal technologies, and in drain treatment technologies. The ballast water treatment technologies group seeks to verify technologies that treat ship ballast water to remove unwanted organisms, thereby addressing concerns about non-native species in US waters. The wet weather flow area addresses technologies for urban wet weather flows, uncontrolled storm water discharges, combined sewer overflows, and sanitary sewer overflows.

EPA and NSF International faced a unique challenge in developing acceptable protocols for wet weather and indrain treatment devices. Unlike most protocols, where available technologies have similar operating characteristics, the types of technologies emerging for treating runoff differ tremendously. These technologies include separator systems, in-line and insert filtration systems, skimmers, and others. Developing these protocols involved partnerships with EPA, NSF, storm water experts, state regulators, private- and public-sector end users, and the manufacturers. The Center strives to incorporate a diversity of stakeholders to ensure that the protocols incorporate all of the factors important for verification testing of water quality protection technologies. Involving a variety of stakeholders ensures that the protocols are flexible enough to address a variety of operating characteristics, yet comprehensive enough to include testing requirements that provide useful information.

As the Water Quality Protection Center moves forward, it seeks to verify technologies of interest to state regulators, private and public sector end users, and storm water experts. Possible future areas of interest include, among others, erosion control technologies, on-site chlorine generation from seawater and brine, car wash treatment systems, and membrane liners.

ETV Greenhouse Gas Technology Center Presents at National Governors' Association Workshop

From February 28 to March 1, 2002, the National Governors' Association's Center for Best Practices hosted a workshop, Taking the Lead: A Workshop on State Innovations to Reduce Greenhouse Gases, at the Hall of States in Washington, DC.on State Innovations to Reduce Greenhouse Gases, at the Hall of States in Washington, DC. Sponsored by EPA's ETV Program and the State and Local Capacity Building Branch of EPA's Office of Air and Radiation, the workshop brought together

representatives from Governors' offices and state, environmental, and energy agencies to discuss mitigation strategies that reduce greenhouse gases while achieving other economic and air quality goals. About 60 representatives from 25 states and federal offices attended.

On the second day of the workshop, Steve Piccot from Southern Research Institute, partner for the ETV Greenhouse Gas Technology Center, chaired a session on the ETV Program and his Center, including in his presentation an overview on the vendors with whom the Greenhouse Gas Technology Center has worked. Chairing the session with Mr. Piccot was Dr. Joseph Visalli, Program Director for the New York State Energy Research and Development Authority (NYSERDA), a state organization with whom the Greenhouse Gas Technology Center is partnering to verify the performance of five technologies. NYSERDA focuses on using innovation and technology to solve energy and environmental problems in ways that improve the state's economy. Together, Mr. Piccot and Dr. Visalli emphasized the benefits that states can attain by working with the ETV Program. Further information on the ETV Greenhouse Gas Technology Center can be found at the ETV web site (http://www.epa.gov/etv) and at the Center web site (http://www.sri rtp.com).

Three ETV Centers Verify Six Technologies

Three ETV Centers recently completed verifications, increasing the total number of verified technologies to 170!

The P2 metal finishing technologies area of the ETV Pollution Prevention, Recycling, and Waste Treatment Systems Center verified the performance of two technologies. Hydrometrics, Inc.'s HEROTM System is a three-step high efficiency reverse osmosis process that combines "off-the-shelf" equipment to convert wastewater into reusable water. The Hadwaco Mechanical Vapor Recompression Evaporator System is designed to process wastewaters containing dissolved metals. The ETV Pollution Prevention, Recycling, and Waste Treatment Systems Center also verified the performance of Hydromatix

Web Watch

- **The February 2002 issue of the Greenhouse Gas Technology Newsletter is available at http://www.epa.gov/etv/12/12_nws_022002.pdf.**
- **New fact sheets for the ETV Centers and Program have been posted at http://www.epa.gov/etv/library.htm**
- **The February 2002 issue of The Monitor from the ETV Advanced Monitoring Systems Center has been posted at http://www.epa.gov/etv/07/07_mon_feb02.pdf.**

ETV Events

Date	Location	Event
May 1-2	Washington, DC	ETV Program - ETV exhibit at the EPA Science Forum 2002
May 7-9	Boston, MA	ETV Program - ETV exhibit at the 14th Annual EnviroExpo Conference
May 13-17	New Orleans, LA	ETV Air Pollution Control Technology Center - Presentation at the 21st International Conference on Incineration and Thermal Technologies
May 20-23	Monterey, CA	ETV Program - ETV exhibit at the Third International Conference on Remediation of Chlorinated and Recalcitrant Compounds
May 20-23	Las Vegas, NV	ETV Program - ETV exhibit at the WasteExpo 2002 Conference
May 20-23	Madison, WI	ETV Program - ETV exhibit at the National Monitoring Conference 2002
May 21	Madison, WI	ETV Advanced Monitoring Systems Center - Water stakeholder group meeting
June 1-6	San Diego, CA	ETV Advanced Monitoring Systems Center - Site characterization and monitoring technologies presentation at the 2002 American Industrial Hygiene Conference and Expo
June 4	Manchester, NH	U.S. EPA and the Northeast Waste Management Officials' Association - Improving the Quality of Site Characterization Conference and Trade Show - ETV vendors with appropriate technologies are invited to exhibit
June 5	Pittsburgh, PA	ETV Water Protection Technologies Center - Source water protection technologies' infrastructure rehabilitation technologies stakeholder group meeting
June 6	Farmington, CT	U.S. EPA and the Northeast Waste Management Officials' Association - Improving the Quality of Site Characterization Conference and Trade Show - ETV vendors with appropriate technologies are invited to exhibit
June 16-20	New Orleans, LA	ETV Program and ETV Drinking Water Systems Center - ETV exhibit and Drinking Water Systems presentation at the 2002 Annual American Water Works Association Conference and Exposition
June 18	Alexandria, VA	ETV Water Protection Technologies Center - Source water protection technologies ballast water technologies' stakeholder group meeting
June 23-27	Baltimore, MD	ETV Program, ETV P2, Recycling, and Waste Treatment Systems Center, and ETV Advanced Monitoring Systems Center - ETV exhibit and ETV, advanced monitoring systems, and P2 innovative coatings and coating equipment presentations at the Air and Waste Management Association (A&WMA) 95th Annual Conference and Exposition
June 24-27	Chicago, IL	ETV P2, Recycling, and Waste Treatment Systems Center - P2 metal finishing technology presentation at the American Electroplaters and Surface Finishers Society SUR/FIN 2002 Conference

For more details on ETV events, check out our online calendar at http://www.epa.gov/etv/highup.htm

Corporation's 786E Ion Exchange Rinsewater Recycling System for removal of cations and anions from rinse wastewaters generated during metal finishing operations.

The ETV Drinking Water Systems Center verified the performance of Osmonics, Inc.'s Model PS 150 Ozone Disinfection System for inactivation of Cryptosporidium parvum oocyst and determination of concentration-time values as a surrogate for Giardia lamblia and virus inactivation in drinking water. The Center also verified the performance of Pall Corporation's MicrozaTM Microfiltration System equipped with a 3-inch filter module, which is used in packaged drinking water treatment systems.

The ETV Greenhouse Gas Technology Center verified the performance of JCH Fuel Solutions, Inc.'s Enviro Automated Fuel Cleaning and Maintenance System, Model 4 (Enviro System) for the treatment and maintenance of fuel from diesel-fired, reciprocating engines.

The new verification reports and verification statements are available on the ETV Program web site at http://www.epa.gov/etv/library.htm.

Improving the Quality of Site Characterization Conference and Trade Show

Cosponsored by U.S. EPA and the Northeast Waste Management Officials' Association (NEWMOA), this conference and trade show will take place in June on two dates and in two locations: June 4 in Manchester, NH and June 6 in Farmington, CT. To request a conference brochure, contact Jennifer Griffith, NEWMOA, at 617-367-8558 x303 or via e-mail at jgriffith@newmoa.org. For further information on exhibiting, contact Rob Guillemin, EPA New England, at 800-575-CEIT (617-918-1783 if you are calling from outside of New England) or via e-mail at guillemin.robert@epa.gov.

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